

# LONG POINT BIRD OBSERVATORY

## 2016 PROGRAM REPORT

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**JANUARY 2017**  
**MARK CONBOY**

Canadian Migration  
Monitoring Network



Réseau canadien  
de surveillance  
des migrations



**BIRD STUDIES**  
**ÉTUDES D'OISEAUX** **CANADA**

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# INTRODUCTION

## LONG POINT BIRD OBSERVATORY

In October 1959 six members of the [Ontario Bird Banding Association](#) made the first expedition to the Tip of Long Point in search of an ideal location to study bird migration. In the spring of 1960, the [Long Point Bird Observatory](#) (LPBO) and its Migration Monitoring Program was born. Subsequently, LPBO is the oldest bird observatory in the Western Hemisphere and houses one of the largest data sets on migratory birds in the world.

LPBO quickly grew beyond the borders of Long Point, implementing regional and provincial research and monitoring programs, and initiating North America's first sponsored bird count fundraiser, the Baillie Birdathon. Remarkable growth occurred in the following decades with the initiation and coordination of a wide range of national and international programs and initiatives. In 1998, in recognition of the organization's breadth and future aspirations, LPBO membership voted to create Bird Studies Canada (BSC). LPBO was then reinvented as a research program of BSC operating research, education, and training programs that focus on ornithology, conservation, and other aspects of natural history at Long Point and across Canada. LPBO programs include the Migration Monitoring Program, the Doug Tarry Natural History Fund (Young Ornithologists` Workshop and Internship), the Tree Swallow Project, the Latin American Training Program, Long Point Breeding Bird Census, and an active and diverse program of public education, professional training, and collaborative research.

You can follow our weekly [sightings board](#) during the migration monitoring seasons, or find us on [Facebook](#) or [Twitter](#).

## BIRD STUDIES CANADA

[Bird Studies Canada](#) is the country's leading science-based bird conservation organization. BSC's mission is to conserve the wild birds of Canada through sound science, on-the-ground actions, innovative partnerships, public engagement, and science-based advocacy.

BSC is a national charity built on the contributions of thousands of supporters and citizen scientists. Using data from our volunteer monitoring programs and targeted research, our scientists identify significant population changes and direct conservation planning. We are a strong partner in BirdLife International, the world's largest conservation alliance for nature and people, active in more than 120 countries and territories.

## ACKNOWLEDGEMENTS

LPBO programs are supported by BSC, the LPBO Endowment Fund, the Doug Tarry Natural History Fund, the Baillie Birdathon, a variety of organizations, agencies, and many individuals. We are particularly grateful to the Ontario Ministry of Natural Resources and Forestry (Aylmer District Office) and Wildlife Assessment Program, and to Environment and Climate Change Canada for their support of the Latin American Training Program and migration monitoring as a contribution to the Canadian Migration Monitoring Network. LPBO is also grateful for the support of the Bradstreet Family Foundation, the Ontario Trillium Foundation, TD Friends of the Environment Foundation, the Norfolk Land Stewardship Council, James and Betty Runnings, and numerous anonymous donors. We wish to acknowledge the support and collaborative research carried out with numerous institutions (see collaborative research below). LPBO is also grateful for the permission it receives to operate its programs on properties owned by: Norfolk County, Fisheries and Oceans Canada, Transport Canada, Environment and Climate Change Canada, Long Point Company, Ontario Ministry of Natural Resources and Forestry, Ontario Ministry of the Environment, and Connie and Vernon Smith.



Environment  
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This project was undertaken with the financial support of the Government of Canada.

Ce projet a été réalisé avec l'appui financier du gouvernement du Canada.

Canada

## MIGRATION MONITORING PROGRAM

LPBO has been collecting standardized data on bird migration at Long Point since 1960. In 1986, LPBO coined the term *migration monitoring* to describe the use of standardized daily counts of migrating birds as a method of monitoring populations of selected migratory species. Each spring and fall, staff and volunteers perform daily censuses, banding, and observations at each of three research stations on Long Point: Old Cut, Breakwater, and the Tip. The migration count data assembled at LPBO are used to derive daily estimated totals for each species recorded throughout the year. Ultimately, estimated total data are used to generate [population trends](#) for over 200 species. Migration monitoring is a particularly valuable method as it enables the monitoring of species that breed in northern Canada, or other inaccessible areas, which can be difficult to assess with more conventional monitoring methods such as the North American Breeding Bird Survey. There are now about 30 migration monitoring stations across Canada which form the [Canadian Migration Monitoring Network](#).

In 2016 24,612 birds were banded at LPBO. Additionally 5,419 recaptures of previously banded birds were processed. The first Barred Owl ever banded at LPBO was captured during the fall season. Other notable banding records included the eighth ever Broad-winged Hawk (the first since 2006), the fourth ever Painted Bunting and record high banding totals for:

- Cliff Swallow, 22 (previous record was 13 in 1982);
- Oregon Junco, three (single birds banded in six previous years)
- Red-eyed Vireo, 496 (previous record was 490 in 2012);
- Summer Tanager, four (tied with 2009);
- Tufted Titmouse, five (previous record was four in 2005);
- Warbling Vireo, 162 (previous record was 143 in 2014); and
- Yellow Palm Warbler, six (tied with 2005).

Despite these highlights, LPBO had its lowest number of birds banded since 2004. In 2016, LPBO banded 15.5% (4,498 individuals) fewer birds than the previous 10-year average. The story was no better for the number of species and forms, with 2016 again being the lowest total since 2004. The 141 species and forms captured in 2016 was about 10% (16 species) below the previous 10-year average.

Fifteen birds that were banded at LPBO were reported as encountered elsewhere in 2016 (Table 1). The farthest afield encounter was of a Pine Siskin captured in Alberta in June, after being banded at the Old Cut feeders in February. The most interesting encounter record was of a Northern Saw-whet Owl that was banded at the Tip station October 26 and recaptured at Kelley Island, Ohio, approximately 200 km away after only 19.5 hours! The previous flight time record for a Long Point bird showing up at Kelley's Island was 47 hours.

LPBO had 10 foreign recaptures that were confirmed by the Bird Banding Office (BBO) to date (Table 2). LBPO also reported encounter data for several other birds, but had not received data from the BBO before this report was published: American Tree Sparrow (1), Brown-headed Cowbird (1), Common Yellowthroat (1), Northern Cardinal (1), Northern Saw-whet Owl (1), Red-winged Blackbird (4), Slate-colored Junco (1), Snow Bunting (2), Tree Swallow (1), and a Trumpeter Swan (sight record, wing-tagged bird).

In addition to banded and recaptured birds, LPBO counted 3,963,864 birds during 8,517 person-hours of migration monitoring.

**Table 1.** Encounters of LPBO banded birds reported from elsewhere in 2016. AHY = after hatch year; ASY = after second year; HY = hatch year; SY = second year.

Species	Age at Banding	Banding Date	Encounter Date	Encounter Location
Brown Creeper	AHY	16/4/2016	25/9/2016	New York
Brown-headed Cowbird	AHY	15/4/2016	3/5/2016	Ontario
Brown-headed Cowbird	AHY	15/4/2016	27/4/2016	Pennsylvania
Common Grackle	AHY	14/4/2016	15/5/2016	Ontario
Fox Sparrow	AHY	6/4/2016	11/11/2016	South Carolina
Hermit Thrush	HY	11/10/2016	26/10/2016	North Carolina
House Wren	AHY	7/5/2016	24/7/2016	Ontario
Northern Saw-whet Owl	HY	19/10/2016	7/11/2016	Ohio
Northern Saw-whet Owl	HY	26/10/2016	26/10/2016	Ohio
Northern Saw-whet Owl	ASY	5/11/2016	14/11/2016	Ontario
Northern Saw-whet Owl	HY	14/10/2016	24/10/2016	Ohio
Pine Siskin	SY	19/2/2016	26/6/2016	Alberta
Red-winged Blackbird	ASY	25/4/2016	1/6/2016	Ontario
Slate-colored Junco	AHY	2/4/2016	1/11/2015	Ontario
Yellow Warbler	SY	8/5/2016	30/6/2016	Ontario

**Table 2.** Foreign recaptures at LPBO in 2016. ASY = after second year; HY = hatch year; L = nestling; SY = second year.

Species	Age at Banding	Encounter Date	Banding Date	Banding Location
Trumpeter Swan	HY	20/3/2016	29/9/2015	near Grand Valley, ON
American Goldfinch	SY	6/5/2016	18/2/2015	St. Williams, ON
American Tree Sparrow	SY	7/1/2016	23/1/2015	St. Williams, ON
House Finch	HY	16/3/2016	21/8/2015	near St. Williams, ON
Northern Saw-whet Owl	HY	10/10/2016	2015	near Duluth, MN
Red-winged Blackbird	SY	24/5/2016	26/4/2016	St. Williams, ON
Snow Bunting	ASY	17/1/2016	15/1/2011	Port Rowan, ON
Tree Swallow	L	14/5/2016	6/5/2009	Nanticoke, ON
Tree Swallow	L	7/6/2016	19/6/2011	St. Williams, ON
White-throated Sparrow	HY	3/5/2016	11/10/2014	Montreal, QC

## SPRING MIGRATION MONITORING

LPBO's 56<sup>th</sup> spring migration monitoring season ran at Old Cut from March 28 to June 5 (69 days), at Breakwater from April 12 to June 1 (49 days), and at the Tip from April 6 to May 31 (56 days). Because migration was very slow by the end of May, monitoring operations at all three stations were slightly truncated so personnel could concentrate on the Breeding Bird Census (see below). The 42 volunteers who helped run operations during the spring season came from Australia, Canada, Columbia, the United Kingdom, and the United States. Staff and volunteers logged 2,813 person-hours collecting migration data on over 242 species and forms. Summary statistics of seasonal effort are summarized in Table 3. In total, 13,302 birds of 120 species and forms were banded (Table 4 and Appendix 1). LPBO had 174 station-days of coverage, yielding 8,233 net-hours and 1,870 trap-hours with a catch rate of 131 birds/100 hours (78% of captures were by nets). About 20 volunteer Friends of LPBO helped to welcome 1,648 visitors to the Old Cut Field Station and Visitor Centre.

**Table 3.** Effort summary statistics for spring migration monitoring.

Person-hours	2,813
Total species and forms observed	242
Individuals banded	13,302
Species and forms banded	120
Total station-days of migration monitoring	174
<i>Old Cut</i>	69
<i>Breakwater</i>	49
<i>Tip</i>	56
Total net-hours	8,074
<i>Mist net</i>	8,233
<i>Hawk net</i>	0
<i>Owl net</i>	0
Total trap-hours	1,870
<i>J-trap</i>	767
<i>Ground trap</i>	983
<i>Other traps</i>	120
Overall catch rate	131 birds/100 hours
% of catch in mist nets	78
% of catch in traps	22
Visitors to Old Cut	1,648

**Long-term Volunteers** (One month or more): Brendan Boyd (Toronto, ON), Kyle Cameron (Peterborough, ON), Ana Maria Diaz (Colombia), Daniel Geisbrecht (Saskatoon, SK), Veronique Drolet-Gratton (Ottawa, ON), Bruce Harlow (Australia), Blaine Landsborough (Windsor, ON), Matt Macpherson (Guelph, ON), Bruce Murphy (Hillardton Marsh Bird Observatory, ON), Maya Longpre-Croteau (Montreal, QC), Anna Rogers (London, ON), Roger Short (Devon, UK), Chris Sukha (North Bay, ON), Kyle Sutherland (Guelph, ON), Matt Timpf (Port Dover, ON), Pierre Tellier-Machabee (La Pocatière, QC), Helen Williams (Devon, UK), Amy Wilson (Straffordville, ON), Wayne Wright (Toronto, ON), and Kevin Young (London, ON).

**Short-term Volunteers** (Less than one month): Christian Artuso (Winnipeg, MB), Natasha Barlow (Toronto, ON), Liza Barney (Port Rowan, ON), Dave Bell (Sue Ste Marie, ON), Amanda Bichel (Port Rowan, ON), Rinchen Boardman (Thunder Cape Bird Observatory, ON), Carolyn Bonta (Kington, ON), David Brewer (Toronto, ON), Kaelyn Bumelis (Burlington, ON), Nick Cairns (Val Marie, SK), Peter Coo (Toronto, ON), Tara Crewe (Port Rowan, ON), Zoe Crysler (Toronto, ON), Elsie Hampshire (Peterborough, ON), Sean Jenniskens (Toronto, ON), Ted Maddeford (Ingersoll, ON), Dawn Miles (Toronto, ON), Ellie Milnes (Guelph, ON), Eleanor Page (London, UK), Rebecca Peace (Peterborough, ON), Liz Purves (Woodstock, ON), Bill Read (Cambridge, ON), Emily

Rondel (Toronto, ON), Gery van der Kelen (Saint-George, QC), and Ross Wood (Hamilton, ON).

**Birding highlights from the spring season included:**

**Eurasian Wigeon** – A male was found April 5 along East Quarter Line Road, south of Concession Road 10. It continued at that location until April 10, then relocated to Lee Brown Wildlife Management Area, where it was re-sighted daily until April 14. It then returned to East Quarter Line Road on April 29.

**Pacific Loon** – One was discovered off the Tip May 24, followed by three more on May 25. One bird was still present on May 26. Pacific Loon had been reported from Long Point on only three previous occasions.

**Yellow-billed Loon** – An alternate plumage Yellow-billed Loon was seen flying past the Tip April 12. It was flying with a Common Loon, making for good comparisons between the two species. Unfortunately, it could not be relocated subsequently. If this record is accepted by the Ontario Rare Birds Committee, it will be the 401st species for the Long Point checklist.

**Swallow-tailed Kite** – One was seen flying over Highway 24 near Backus Woods June 5.

**Piping Plover** – Two different banded birds were found in 2016. The first was just west of the Tip along the south shore on May 7. The second bird was at Breakwater May 20 and was resighted periodically until June 3. Both birds were originally banded in Michigan in 2015.

**Chuck-will`s-widow** – A probable Chuck-will`s-widow was flushed at Breakwater April 25.

**Common Raven** – One was found on the Turkey Point Conservation Reserve April 5. More sightings followed, including a single bird at Backus Woods April 14, and two at the Bird Studies Canada Headquarters April 27. Two additional reports came from Port Ryerse on May 17 and May 22. It is suspected that this species is breeding in Norfolk County for the first time, but it has not been confirmed.

**White-eyed Vireo** – One was heard singing at Old Cut May 14. Perhaps the same bird was banded there May 16. Another was banded at Old Cut May 22. There were additional sightings at Old Cut May 22-26. One was also in Backus Woods May 21 and 25. Another bird set up territory near the Tip in early June; no nest could be found.

**Sedge Wren** – The first of the year was on Hastings Drive May 13. Another was found south of Gravelly Bay June 2.

**Golden-winged Warbler** – Reports of single birds came from Hastings Drive May 13, the Tip May 12 and 20, and the Wilson Tract May 21.

**Brewster’s Warbler** – One was at Old Cut May 7. This bird was singing a Golden-winged Warbler’s song but had clear indications of hybrid ancestry in its plumage.

**Prairie Warbler** – The bird that was found on April 30 remained at the Big Creek National Wildlife Area parking lot until May 2. One was banded at the Tip May 12. One was singing south of Gravelly Bay May 26.

**Yellow-breasted Chat** – One was banded at the Tip May 12.

**Summer Tanager** – A female was seen at Old Cut May 12, and was also likely one of the two that were banded May 15 at Old Cut. There were periodic sightings of birds at Old Cut through May 27. Two more birds were banded at the Tip May 23 and 27.

**Oregon Junco** – The Oregon Junco that was first found and banded on March 31 at Old Cut remained until April 12.

**Yellow-headed Blackbird** – A male was found along the causeway April 7.

**Brewer’s Blackbird** – One was singing along Front Road in Port Rowan April 25.

**Table 4.** Ten most abundant species banded at Old Cut, Breakwater and the Tip in spring 2016.

Species	Number Banded	% Second Year	% After Second Year	% After Hatch Year
White-throated Sparrow	1,583	66	25	9
Slate-colored Junco	955	72	26	1
Red-winged Blackbird	915	61	38	1
American Goldfinch	634	67	27	6
Yellow Warbler	541	63	34	3
Ruby-crowned Kinglet	510	58	39	3
Gray Catbird	467	66	31	4
Blue Jay	448	84	15	1
Common Grackle	391	19	3	78
Hermit Thrush	382	60	37	2

## FALL MIGRATION MONITORING

LPBO's 57<sup>th</sup> fall migration monitoring season ran at Old Cut from August 6 to November 15 (101 days), at Breakwater from August 19 to September 20 (33 days), and at the Tip from August 15 to November 7 (85 days). As with every year, Breakwater closed before Old Cut and the Tip because of Long Point Company land use restrictions associated with waterfowl hunting near the field station.

The 38 volunteers who helped run operations during the fall season came from Australia, Brazil, Canada, Czech Republic, Peru, the United Kingdom, and the United States. Staff and volunteers logged 5,704 person-hours collecting migration data on over 272 species and forms. About 20 volunteer Friends of LPBO helped to welcome 1,629 visitors to Old Cut.

Summary statistics of seasonal effort are summarized in Table 5. In total, 8,847 birds of 114 species and forms were banded (Table 6 and Appendix 1). LPBO had 219 station-days of coverage, yielding 14,826 net-hours and 1,014 trap-hours with a rather low catch rate of 56 birds/100 hours (94% of captures were by nets).

Long Point is recognized as one of three International Monarch Butterfly Reserves in Canada due to its large concentrations of butterflies during fall migration. In 2016, daily afternoon Monarch censuses were conducted at Breakwater from August 19 to September 12, and at the Tip from August 15 to November 6. The total count of Monarchs was only 1,135, with 225 at Breakwater and 910 at the Tip. The largest single-day count at Breakwater was 26 on September 14, while the largest single-day count at the Tip was 91 on September 1. These are some of the lowest counts on record since 1995. Also of note, the first Zebra Swallowtail observed at Long Point since 1972 (and the first in Ontario since 2012) was caught at the Tip on June 20.

**Table 5.** Effort summary statistics for fall migration monitoring.

Person-hours	5,704
Total species and forms observed	272
Individuals banded	8,847
Species and forms banded	114
Total station-days of migration monitoring	219
<i>Old Cut</i>	101
<i>Breakwater</i>	33
<i>Tip</i>	85
Total net-hours	14,826
<i>Mist net</i>	14,421
<i>Hawk net</i>	176
<i>Owl net</i>	229
Total trap-hours	1,014
<i>J-trap</i>	565
<i>Ground trap</i>	449
<i>Other traps</i>	0
Overall catch rate	56 birds/100 hours
% of catch in mist nets	94
% of catch in traps	6
Visitors to Old Cut	1,629

**Long-term Volunteers** (One month or more): Isabel Apkarian (Toronto, ON), Sarah Bonnett (Waterford, ON), Alvan Buckley (St. John's, NL), Kyle Cameron (Peterborough, ON), Liam Curson (UK), Peter Denyer (UK), Willow English (Victoria, BC), Bruce Harlow (Australia), Jakub Hlaváček (Czech Republic), Yaquelin Leyva (Lima, Peru), Michelle McKay (Peterborough, ON), Eilidh McNab (Scotland), Matt McPherson (Guelph, ON), Victor Penha (Brazil), Antoine Turcotte-van de Rydt (Sherbrooke, QC), and James Wilkinson (UK).

**Short-term Volunteers** (Less than one month): Christian Artuso (Winnipeg, MB), Amanda Bichel (Port Rowan, ON), Josh Brown (Vancouver, BC), Taylor Brown (St. Thomas, ON), Brendan Boyd (Toronto, ON), Amy Chan (Toronto, ON), Tara Crewe (Port Rowan, ON), Ian Davies (Ithaca, NY), Dave English (Victoria, BC), Karl Heide (Mississauga, ON), Catherine Jardine (Vancouver, BC), Dayna LeClair (Guelph, ON), Ted Maddeford (Ingersoll, ON), Ben Oldfield (Cambridge, ON), Eleanor Page (London, UK), Bill Read (Cambridge, ON), Victoria Simkovic (London, ON), Anna Tigano (Kingston, ON), Remi Torrenta (Moncton, NB), Megan Wilcox (Port Rowan, ON), Amy Wilson (Straffordville, ON), Ross Wood (Hamilton, ON), and Casey Wright (Grande Isle, LA).

**Birding highlights from the fall season included:**

**Greater White-fronted Goose** - Long Point was part of the wave of Greater White-fronted Geese that swept through southwestern Ontario: a single bird was at Silver Lake in Port Dover October 16; two flocks totaling 133 birds flew over Old Cut October 18; another group of 85 was on the beach in 'New' Long Point Provincial Park later that afternoon; finally, there were two at Turkey Point October 26.

**Brant** - A lone bird was on the beach in 'New' Long Point Provincial Park October 18.

**Cackling Goose** - Eight were among the Canada Geese at Lee Brown Wildlife Management Area October 26.

**Harlequin Duck** - A male was at the Tip October 29.

**Cattle Egret** - One was in a pasture at the corner of 7th Concession Road and Hazen Road October 24-29. Another one flew over Old Cut November 9.

**Black Vulture** - One was roosting with two Turkey Vultures at Old Cut just one day after the end of the migration monitoring season, on November 16.

**Golden Eagle** – There was a good flight of Golden Eagles this fall! An immature bird flew over the Tip September 25. Single birds flew over Old Cut October 8 and 9. October 22 was the single best day: over West Quarter Line Road, two over Port Rowan, two over Old Cut, and five flew over the Coves viewpoint. Three were spotted over Old Cut October 28 and one over the Hahn Marsh October 31. One was seen on Concession Road 2 October 30 and on Concession Road 3 November 3. One flew over the Bird Studies Canada headquarters November 3. Two went over Old Cut November 4.

**Broad-winged Hawk** - One was banded at Old Cut August 31; this was only the eighth ever banded at LPBO, and the first since 2006.

**Red Knot** - One at the Tip September 1 and 4.

**Buff-breasted Sandpiper** - One was at the Tip September 1. Another was seen on an exposed stretch of Bluff Bar September 19.

**Long-billed Dowitcher** – Two found at the Port Rowan Wetland September 24, with one remaining until October 15.

**Hudsonian Godwit** - One made a brief appearance at the Tip October 21.

**Laughing Gull** - An adult was at the Tip October 18.

**Sabine's Gull** - A juvenile was seen from the Port Dover pier October 16. Another was at the Tip October 18. A hatch-year bird was seen from 'New' Long Point Provincial Park October 26.

**Pomarine Jaeger** - Three were harassing Great Black-backed Gulls at the Tip October 18.

**Parasitic Jaeger** – An adult flew past the Tip September 28, followed by another on September 29. Two were seen from the Tip September 30. Single birds were seen at the Tip October 11, 17, 18 and 24. One was off the beach at 'New' Long Point Provincial Park October 26. Another was at the Tip October 29.

**Eurasian Collared-Dove** – One was seen September 9 at the Coves.

**Barred Owl** - The first ever Barred Owl banded at LPBO was caught October 25.

**Common Raven** – One was in the St. Williams Conservation Reserve September 16. Periodic sightings continued throughout the fall, mainly in St. Williams Conservation Reserve.

**White-eyed Vireo** – Individuals were seen at the Tip August 18, October 2 and October 14.

**Tufted Titmouse** – This was a record fall Tufted Titmice banding at LPBO: One was seen at Breakwater August 20. One was banded at Old Cut October 15. Another was at the Tip October 19. Three were banded at Old Cut October 25, followed by another one October 26. Another bird visited a feeder in Port Rowan October 29.

**Golden-winged Warbler** – An apparently phenotypically pure male hung around southern Backus Woods August 18-21. One was banded at Old Cut August 21.

**Lawrence's Warbler** – In the same area as the Golden-winged Warbler, a Lawrence's Warbler was also seen, August 18-28.

**Connecticut Warbler** – A very unusual summer report came from Backus Woods June 1. A very late bird was at the Tip October 1.

**Yellow-throated Warbler** – A yellow-lored bird was found at the Tip August 11. A white-lored bird was found at Breakwater August 20.

**Dickcissel** - One was heard flying over the Tip August 30, but even better was the flock of 22 that flew over Old Cut September 2. One was found at the Tip September 19.

**Nelson's Sparrow** - Two were discovered at Big Creek National Wildlife Area October 2. One of those birds obligingly hung around the main viewing platform until October 7.

**Oregon Junco** - One was banded at the Tip October 2, followed by another on October 19.

**White-winged Crossbill** - One was at the Tip October 7. Four flew over Old Cut November 5. One was seen along West Quarter Line Road November 7.

**Table 6.** Ten most abundant species banded at Old Cut, Breakwater and the Tip in fall 2016.

<b>Species</b>	<b>Number Banded</b>	<b>% Hatch Year</b>	<b>% After Hatch Year</b>	<b>% Unknown</b>
Blackpoll Warbler	619	76	24	0.3
Magnolia Warbler	549	92	8	0.4
Ruby-crowned Kinglet	492	84	13	3
Northern Saw-whet Owl	470	72	28	0
Swainson's Thrush	458	83	17	0.4
Myrtle Warbler	408	95	5	0.5
Red-eyed Vireo	374	95	5	0
Golden-crowned Kinglet	298	91	7	1
American Redstart	255	90	10	0
House Sparrow	254	66	3	31

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## **THE FRIENDS OF LONG POINT BIRD OBSERVATORY**

The Friends of LPBO continued in 2016 as a group of 20+, mostly local, volunteers who greet and inform visitors to the Old Cut Research Station while running the LPBO Shop and helping with a myriad of other tasks around the station, including scribing, extracting and gathering observations. Revenue from the shop provides critical support to LPBO programs. The presence of the Friends has dramatically increased the quality of our visitor and education services at Old Cut and takes a great deal of pressure off of the Banders-In-Charge and our volunteers.

**Friends:** Hugh McArthur (coordinator), Gail Adams, Joe Gabriel, Paula Gent, Ted Gent, Len Grincevivičius, Barb Hourigan, Gail Larsen, Otto Larsen, Geoff Lilley, Ruth Ann Logan, Ted Maddeford, Sandra Maxwell, Diane Salter, and Evelyn Stone. Apologies to anyone who may have been missed.

## Tree Swallow Project

This comprehensive long-term research program was initiated in 1963 at the eastern Tip of Long Point, under the direction of David Hussell and Geoff Holroyd. While the initial work at the Tip provided valuable detailed data on breeding biology, the need for a broader geographic scope prompted expansion of this project to include two mainland sites in the mid-1970s, presently at Mud Creek and the Port Rowan Sewage Lagoons. Across these sites, the current project consists of 206 nest boxes with differing geography, food abundance, and micro-climates. The objectives of this project are (1) to provide a long-term record of breeding performance of Tree Swallows in relation to their food supply and local climate; (2) to provide other opportunities for research on breeding swallows; and (3) to provide training in field ornithology for students and other volunteers.

Since its inception, the project has annually supported post-graduate, graduate and undergraduate students, has involved the training of more than 200 volunteer fieldworkers, and has resulted in over 20 peer-reviewed publications and numerous theses and presentations. David Hussell ran the project until 2009. Ryan Norris and David Bradley ran the project until 2014 when BSC resumed management of the project while a new principle investigator is sought.

The project completed its 46th year in 2016. As in 2015, the project was significantly scaled back from pre-2014 levels because a full time coordinator was not involved. Nest box occupancy was 95% across all three sites. In total 109 new adults were banded and 219 adults were recaptured with bands. An additional 686 nestlings were also banded (Table 7). In addition to trapping adults and banding young, Environment and Climate Change Canada sampled young from the Tip to measure accumulated toxins from the environment.

**Interim Project Coordinators:** Veronique Graton-Drollet, Stu Mackenzie, and Matt Iles.

**Volunteers:** Mark Conboy, Bruce Harlow, Tim Lucas, Matthew MacPherson, Bill Read, Anna Rodgers, Roger Short, Pierrot Tellier-Machabée, Helen Williams, and Amy Wilson.

**Table 7.** Summary of Tree Swallow Project banding in 2016.

Location	Total Boxes	Active Nest Boxes	% Active Nest Boxes	New Adults Banded	Recaptured Adults	Nestlings Banded
Tip	64	63	98	27	64	172
Sewage Lagoon	62	62	100	38	66	249
Tip	80	71	89	44	89	265
<b>Total</b>	<b>206</b>	<b>196</b>	<b>95</b>	<b>109</b>	<b>213</b>	<b>686</b>

## BREEDING BIRD CENSUS

The Breeding Bird Census was established by LPBO in 1991. Fifteen 10 ha breeding bird census plots were installed across representative habitats on Long Point to monitor the response of vegetation and breeding bird communities after a deer cull. Following acquisition of Long Point in 1866, the Long Point Company reintroduced previously extirpated White-tailed Deer to the point. A lack of natural predators subsequently resulted in a deer population explosion that, by 1989, was demonstrating negative impacts on the fragile ecology of Long Point. In 1989/90 the Canadian Wildlife Service organized a cull of nearly 500 White-tailed Deer on Long Point to keep the herd at a sustainable level. Smaller culls have been carried out since then.

In 2016, and thanks to support from the Nature Conservancy of Canada and Environment and Climate Change Canada, all 15 Breeding Bird Census plots were surveyed. Each plot was visited 8-10 times for 3-4 hours in the morning beginning 1 hour before sunrise, and 1-2 times in the evening between May 25 and July 5. During these visits the territories of all birds on each plot were mapped. In addition to the territory mapping, two rounds of point counts were conducted on each plot. Vegetation surveys were also done on all plots by the Nature Conservancy of Canada and Environment and Climate Change Canada.

In total, 59 species were detected during the territory mapping field work, and 83 species during the point counts. The composition of the most abundant species was nearly identical in all plots between the two methods. A complete analysis of territory mapping versus point count methodology is currently underway and will be available separately.

**Field Crew:** Mark Conboy, Zoe Crysler, Ana Maria Diaz, Daniel Geisbrecht, Matt Iles, Tim Lucas, Matt Macpherson, and Ross Wood.

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## NORTH AMERICAN BANDING COUNCIL - BANDER CERTIFICATION

On November 5 to 6, LPBO hosted a [North American Banding Council](#) certification session in collaboration with the Ontario Bird Banding Association. Three new trainers and five new banders were certified.

**Participants:** Willow English (trainer), Veronique Graton-Drollet (bander), Brett Fried (trainer), Matt Iles (trainer), Yaquelin Leyva (bander), Victor Penha (bander), Antoine Turcotte-van de Rydt (bander), and Luis Villamil (bander).

**NABC trainers:** Mark Conboy, Audrey Heagey, Dayna LeClair, David Okines, Stu Mackenzie, and Ross Wood.

## **WETLAND SURVEYS**

In 2016 LPBO conducted wetland bird community and habitat surveys along three routes (consisting of seven sites each) within the Long Point National Wildlife Area, for Environment and Climate Change Canada and the Nature Conservancy of Canada. Surveys were conducted following the Coastal Habitat Assessment and Monitoring Project (CHAMP): Marsh Bird Survey Protocol between May 23 and July 2. Six of nine focal species were detected: American Coot, Least Bittern, Pied-billed Grebe, Sora, and Virginia Rail. Pied-billed Grebe was by far the most numerous. Other species at risk, or of special interest included Bank Swallow, Barn Swallow, Black Tern, Chimney Swift, and Eastern Wood Pewee.

**Field Crew:** Ross Wood.

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## **DOUG TARRY NATURAL HISTORY FUND**

LPBO began the Young Ornithologists' Workshop in 1975, as the Bird Study Workshop. The project received major support in 1994 thanks to the generosity and foresight of the late Doug Tarry, who allowed for the establishment of the Doug Tarry Natural History Fund to support educational activities for young Canadians at LPBO. The fund supports the Young Ornithologists' Workshop and Student Internship.

Since 1991, the program has trained 151 teens, many of whom are now some of the best and brightest naturalists and scientists in the country. These programs are aimed at providing pre-university level students with an opportunity to experience nature and ornithology hands-on in a research oriented setting. Six teens from across Canada participated in the 2016 workshop, August 6 to August 14.

**Young Ornithologists:** Hayden Bildy (London, ON), Cole Gaeber (Vancouver, BC), Tessa Gayer (Toronto, ON), Robin Moore (Edmonton, AB), Peter Simons (Barrie, ON), and Hannah Stockford (Stayner, ON).

**Young Ornithologist Interns:** Josh Brown (Vancouver, BC) and Ben Oldfield (Cambridge, ON).

**Project Assistants:** Jody Allair (BSC), Liza Barney (BSC), Mark Conboy (LPBO - Leader), James Cowan (Canadian Raptor Centre), Mary Gartshore, Matt Iles (LPBO - Leader), David Okines (Ontario Bird Banding Association), and Amy Wilson.

## **LATIN AMERICAN TRAINING PROGRAM**

LPBO has been operating a series of Latin American training initiatives since 1987. In 1995, LPBO began bringing trainees north to Long Point for a formal month-long (or longer) training stint immersing them in the Migration Monitoring Program. Participants receive the most up-to-date training in bird banding, migration monitoring, and data management. To date LPBO has trained over 100 individuals from 15 countries throughout Central and South America. LPBO also contributes to the development of protocols, training opportunities abroad, and certification through the North American Banding Council and the Western Hemisphere Bird Banding Network.

**Participants:** Yaquelin Leyva (Peru), Victor Penha (Brazil), and Ana Maria Diaz (Colombia).

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## **COLLABORATIVE RESEARCH**

The following is a brief summary of LPBO's collaborative research projects in 2016. All projects are conducted with appropriate permits and have been approved by animal care committees. Project summaries were provided by the researchers.

### **Long Term Effects of Chronic Perceived Predation Risk on the Avian Brain**

Lauren Witterick (M.Sc. Candidate)

Dr. Liana Zanette

*University of Western Ontario*

For my project, I am looking at the effects of chronic predator induced fear on the brain. In particular, I am looking at for long-term activation in brain regions associated with fear that is still present 7 days after the threat has been removed. This research is conducted in large outdoor aviaries at the Environmental Sciences Western Field Station, allowing me to provide a semi-natural environment for my studies species, Brown-headed Cowbirds, while protecting them from depredation. The goals of this project are to connect known changes in behaviour from depredation risk to changes in brain activation, as well as to connect perceived depredation risk to the effect on the brain as an animal model for post-traumatic stress disorder.



## **What is the Role of the Avian Hippocampus in Encoding, Retention and Retrieval of Spatial Memory?**

Maddie Brodbeck (M.Sc. Candidate)

Dr. David Sherry

*University of Western Ontario*

Investigating the role of the hippocampus, a brain structure important in memory, leads to a better understanding of memory. The avian hippocampus, a functional homologue of the mammalian hippocampus, has a key role in spatial memory. Research is lacking in hippocampus's specific role in stages of spatial memory formation, which begs the question: What is the role of the avian hippocampus in encoding, retention and retrieval of spatial memory? Traditional experiments that investigate the role of hippocampus involve lesioning, or deactivating the hippocampus by other means (i.e. injections of neurotoxin), and measuring performance on behavioural tasks. A limitation of traditional lesioning methods is that they cause permanent damage. However, there are alternative methods to traditional lesioning techniques. A precise way of achieving reversible damage is by cooling the brain. Cryoloops will be used to cool the hippocampus in brown-headed cowbirds at different times during a touchscreen spatial task, in order to block hippocampus at different stages of memory formation. If memory is viewed as having three stages (encoding, retention, and retrieval) then hippocampus can be 'on' and 'off' for different combinations of these stages. For example, if hippocampus is 'on' for both encoding and retention, but 'off' for retrieval, then the role of the hippocampus in retrieval of spatial memory can be easily isolated. Reversible inactivation using cryoloops is not only a more ethical procedure than traditional lesioning techniques, but will also provide rich information on hippocampus' role in different stages of spatial memory.

## **Introduction of Southern Ticks by Migratory Songbirds**

John Scott

*Lyme Ontario*

The aim of our study is to identify ticks parasitizing migratory songbirds during northward spring migration. Specifically, we want to get 25 live ticks from several southern temperate and Neotropical passerines collected from April 15 to June 10, 2016 at the Tip of Long Point, Ontario. In order to help with identification, we will retain live, engorged ticks to molt to the next development life stage. Current taxonomic keys will be employed for *Ixodes* and *Amblyomma* species. PCR amplification and DNA sequencing may be employed for certain ticks. Novel ticks will be catalogued in a biological museum.

## **Epidemiology of *Babesia odocoilei*, a Tick-Borne Emerging Disease of Cervids in Ontario**

Ellie Milnes (D.V.Sc. candidate)

*University of Guelph & Toronto Zoo*

*Babesia odocoilei* is a tick-borne hemoparasite that has recently been identified as an emerging disease causing fatal babesiosis in captive and free-ranging deer species in Canada. The parasite is transmitted by the black-legged tick, *Ixodes scapularis*. This research aims to describe the prevalence of *B. odocoilei* in a variety of cervid species in Ontario in zoos, commercial deer farming enterprises, and free-ranging wildlife, as well as in the arthropods that can act as vectors (i.e., ticks). Migratory birds are a recognised source of tick introduction into new geographic regions, and may facilitate *B. odocoilei* spread, an aspect of *B. odocoilei* eco-epidemiology that has not been well investigated thus far. One of the research objectives is to investigate whether migratory birds may be involved in *B. odocoilei* translocation by surveying ticks removed from birds during routine banding activities.

## **Forest Fragmentation Effects on Survivorship and Dispersal in Juvenile Wood Thrush**

Brendan Boyd (M.Sc. candidate)

Sue Hayes (M.Sc. candidate)

*York University*

Wood thrush is one of the most well-known songbirds experiencing serious declines suspected to be related to several factors including loss of habitat and forest fragmentation, making it an ideal candidate for this project. The aim of this research is to test three main predictions: 1) juvenile mortality is negatively correlated with natal forest size, 2) dispersal distance from the natal site will be negatively correlated with the extent of the forest cover in the landscape matrix, and 3) initiation of autumn migration is negatively correlated with natal forest fragment size. In order to test these predictions, we are going to choose 10 pairs of study sites (large and small fragments) for a total of 20 sites. The aim is to then radio tag two juveniles from separate nests from each site to have a total of forty that will be tracked both manually and using the MOTUS wildlife tracking system. Twenty adults will also be radio-tagged in order to compare their movements to those of the juveniles. The tracking will continue until long distance dispersal takes place.

### **Energetics and Foraging of Migratory Bats during Stopover: A Test of the Torpor-Assisted Migration Hypothesis**

Dylan Baloun (M.Sc. candidate)

Dr. Chris Guglielmo

*University of Western Ontario*

Migratory bats face many energetic challenges: long-distance flight, thermoregulation, and reproduction. Recent studies have estimated the energy cost of migratory stopovers for bats and suggest possible seasonal differences for the torpor-assisted migration hypothesis. My objectives are to 1) validate stopover energy cost estimations made by McGuire et al. (2014) in both migratory seasons and 2) test my hypothesis that bats stopping over for more than one day will show evidence of feeding. All bats will be captured at Long Point Bird Observatory, Long Point, Ontario: a prominent stopover site for migrating birds and bats. Using QMR and temperature data, I will quantify change in endogenous fat and lean mass and total energy expenditure during a stopover. By comparing stable  $^{13}\text{C}$  signatures from breath samples and local insects, I will determine if bats are using stopovers to refuel.  $^{13}\text{C}$  isotope analysis will also allow specific insight as to what fuel (i.e., exogenous fat or protein) bats are catabolizing if they have foraged. This study will test the effects of season from the torpor-assisted migration hypothesis and further our understanding of fuel management at stopovers for migratory bats species.

### **An Analysis of Intra- and Interspecific Variation in the Nocturnal Flight Calls of Migratory Passerines**

Blaine Landsborough (M.Sc. candidate)

Rachel Hasson (M.Sc. candidate)

Dr. Dan Mennill

*University of Windsor*

Dr. Jenn Foote

*Algoma University*

While several techniques facilitate research on the nocturnal movements of migratory songbirds, only the detection of nocturnal flight calls allows biologists to discern between species during active migration. Nocturnal flight calls are species-specific vocalizations produced by birds during migratory activity. Although there has been an increasing interest in the applications of nocturnal flight calls for migration research, many aspects of these vocalizations have received little attention and there is a dearth of information on inter- and intra-specific variation in nocturnal flight calls. The objective of our research is to quantify interspecific and intraspecific variation in the nocturnal flight calls of migratory passerines in eastern North America. We recorded flight calls from temporarily-captive passerines held for banding at Long Point Bird Observatory. After banding, birds were placed in a darkened and sound-dampened recording room where congeneric flight calls were played, using a loudspeaker, to the

individual to induce calling. We also recorded flight calls from actively migrating birds using a microphone array that spanned the Great Lakes region, from Thunder Bay to Pelee Island. Using the acoustic recordings of flight calls produced by both temporarily-captive and actively-migrating individuals, we will generate spectrograms for thousands of calls per species and conduct spectrographic cross-correlation and principal coordinate ordination to compare flight-call recordings among species.

### **Geographic Origin of Second Year Wood Thrushes Nesting in Fragmented Forests of Eastern Ontario**

Rémi Torrenta (M.S.c. Candidate)

Dr. Marc-André Villard

*University of Moncton*

Dr. Keith Hobson

*Western University*

The Wood Thrush is threatened in Canada and is declining everywhere, but populations in fragmented forests of eastern Ontario are surprisingly stable. We want to determine if Wood Thrush populations in forest fragments of eastern Ontario are sink populations which are maintained by the immigration (natal dispersal) of individuals coming from biggest forest stands (source populations). We collected rectrices and blood samples from nesting individuals in forest fragments, as well as in different geological regions around our study sites: Gatineau, Ontarian Shield, Frontenac Arch, St. Lawrence Lowlands, Adirondacks and New York State. We want to compare the different local chemical signatures (stable isotope ratios notably) to the ones of second year Wood Thrush individuals captured in forest fragments.

### **Behavioural Mechanisms of Protandry in the Black-throated Blue Warbler (*Setophaga caerulescens*)**

Jessica Deakin (M.Sc. candidate)

Dr. Yolanda Morbey

Dr. Christopher Guglielmo

*Western University*

Protandry – the earlier arrival of males compared to females – is the norm in migratory birds. In the spring, males arrive to breeding grounds before conspecific females. The behavioural mechanisms that underlie protandry in migratory bird species, such as the Black-throated Blue Warbler, are poorly understood. Do males fly faster, refuel quicker, or simply leave the wintering grounds first? To find out how males behave in order to arrive at their breeding grounds before females, 24 Black-throated Blue Warblers were captured at Long Point Bird Observatory during the 2015 fall migration season. They were kept in captivity over winter at the Advanced Facility of Avian Research located at Western University, London, ON. In March 2016, they were photo-triggered to become migratory and monitored at night using infrared lights and video cameras. This video will be used to determine any sex differences in the onset and intensity of their migratory

restlessness. The birds were released from captivity on May 19, 2016 at LPBO, where they were manually tracked using a 6-element Yagi antenna. In addition, the MOTUS Wildlife Tracking System was used to track their movement away from LPBO to their breeding grounds. These data will be used to determine any sex differences in their departure timing as well as in their diel timing.

### **Monarch Butterfly Habitat Selection during the Breeding Season**

Grace Pitman (M.Sc. candidate)

Dr. Ryan Norris

*Guelph University*

Monarch butterfly habitat selection during the breeding season was examined by monitoring milkweed patches for eggs and larvae in milkweed patches of different areas, densities, and landscape classifications in the Norfolk County and surrounding area. The three landscape classifications were agricultural, non-agricultural, and right-of-way (roadside). Selected milkweed patches were visited once every 7 days over a total of 6 weeks. At each visit the area of the patch, number of plants within the patch, and the number of eggs and larvae within the patch were recorded. To check for the presence of parasitoids and parasites, all fifth instar larvae that were found within the study milkweed patches were collected to be reared and tested. Monarch larvae can be parasitized by Tachinid flies and parasitic wasps. They are also susceptible to the protozoan parasite, *Ophryocystis elektroscirrha* that can be easily tested in a non-invasive method as an adult. To see how invertebrate predators of monarch eggs and larvae differed between landscapes, one standard yellow pan trap was left out for 48 hours at every patch. This was repeated every other week over a 6-week period. Larval survival can be estimated from the repeated weekly visits to see how survival differs at both the landscape level, and at the patch level with different patch areas and densities.

### **Behavioural Mechanisms Underlying the Differential Timing of Spring Migrating White-throated Sparrows**

Andrew Beauchamp (M.Sc. candidate)

Dr. Yolanda Morbey

Dr. Chris Guglielmo

*Western University*

Protandry, the arrival of males on the breeding ground prior to females, is a pattern of migration observed in many songbird species. Several mechanisms are believed to underlie protandry and these mechanisms may be influenced by behavioural traits. I plan to examine the mechanisms underlying protandry using the sexes and behaviourally distinct plumage morphs of the White-throated Sparrow (*Zonotrichia albicollis*). Starting in April of 2017, I will sample birds at the Old Cut Banding Station during migratory stopover. Blood and feather sample will be taken for plasma metabolite, isotope, and genetic analyses. A Quantitative Magnetic Resonance Body

Composition Analyser will be used to examine the percentage of fat and lean mass in each bird. A subgroup of birds will have radio transmitters attached to determine the length of stopover at Long Point. Migration will also be tracked using the Motus radio telemetry array. This study will be one of the first to simultaneously examine multiple mechanisms believed to underlie protandry using the same group of birds. It will also provide insight into the effect

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**APPENDIX 1.**

LPBO's 2016 banding totals for the Old Cut, Breakwater, and the Tip research stations, plus other special research projects.

Species & Forms	Fall				Spring				Other	Grand Total
	Old Cut	Break-water	Tip	Sub Total	Old Cut	Break-water	Tip	Sub Total		
Acadian Flycatcher		1	1	<b>2</b>	2		2	<b>4</b>	1	<b>7</b>
American Goldfinch	44	15	158	<b>217</b>	73	90	471	<b>634</b>	34	<b>885</b>
American Redstart	115	84	56	<b>255</b>	70	26	62	<b>158</b>	1	<b>414</b>
American Robin	19		7	<b>26</b>	38	27	37	<b>102</b>	19	<b>147</b>
American Tree Sparrow	24		6	<b>30</b>	24	9	13	<b>46</b>	307	<b>383</b>
American Woodcock	8		2	<b>10</b>	3	3		<b>6</b>	1	<b>17</b>
Baltimore Oriole	9	1		<b>10</b>	16	57	141	<b>214</b>	3	<b>227</b>
Bank Swallow					2		1	<b>3</b>		<b>3</b>
Barn Swallow					10	2	87	<b>99</b>		<b>99</b>
Barred Owl			1	<b>1</b>						<b>1</b>
Bay-breasted Warbler	10	23	28	<b>61</b>	4		7	<b>11</b>		<b>72</b>
Black-and-white Warbler	54	34	22	<b>110</b>	18	7	19	<b>44</b>	3	<b>157</b>
Black-billed Cuckoo	1	1	1	<b>3</b>	1	1	1	<b>3</b>	1	<b>7</b>
Blackburnian Warbler	11	31	9	<b>51</b>	12	2	12	<b>26</b>	2	<b>79</b>
Black-capped Chickadee	39	3	26	<b>68</b>	3	2	1	<b>6</b>	15	<b>89</b>
Blackpoll Warbler	108	69	442	<b>619</b>	11	24	29	<b>64</b>		<b>683</b>
Black-throated Blue Warbler	127	26	52	<b>205</b>	41	7	18	<b>66</b>		<b>271</b>
Black-throated Green Warbler	8	9	28	<b>45</b>	25	6	16	<b>47</b>		<b>92</b>
Blue Jay	2		14	<b>16</b>	83	53	312	<b>448</b>	1	<b>465</b>
Blue-headed Vireo	14	3	24	<b>41</b>	12	7	12	<b>31</b>		<b>72</b>
Blue-winged Warbler	4	1		<b>5</b>	2	6	11	<b>19</b>		<b>24</b>
Bobolink							1	<b>1</b>		<b>1</b>

Species & Forms	Fall				Spring				Other	Grand Total
	Old Cut	Break-water	Tip	Sub Total	Old Cut	Break-water	Tip	Sub Total		
Broad-winged Hawk	1			<b>1</b>						<b>1</b>
Brown Creeper	40	3	90	<b>133</b>	151	39	154	<b>344</b>	7	<b>484</b>
Brown Thrasher	6		3	<b>9</b>	22	26	45	<b>93</b>	4	<b>106</b>
Brown-headed Cowbird			2	<b>2</b>	20	67	292	<b>379</b>	118	<b>499</b>
Canada Warbler	45	13	13	<b>71</b>	19	2	12	<b>33</b>	2	<b>106</b>
Cape May Warbler	15	34	36	<b>85</b>	13	2	1	<b>16</b>		<b>101</b>
Carolina Wren	3			<b>3</b>	5			<b>5</b>	2	<b>10</b>
Cedar Waxwing	35	13	3	<b>51</b>	8		3	<b>11</b>	17	<b>79</b>
Cerulean Warbler							2	<b>2</b>		<b>2</b>
Chestnut-sided Warbler	38	27	15	<b>80</b>	47	23	35	<b>105</b>		<b>185</b>
Chipping Sparrow	1	6	20	<b>27</b>	14	107	157	<b>278</b>		<b>305</b>
Clay-colored Sparrow							1	<b>1</b>		<b>1</b>
Cliff Swallow							22	<b>22</b>		<b>22</b>
Common Grackle	14			<b>14</b>	197	24	170	<b>391</b>	33	<b>438</b>
Common Tern			6	<b>6</b>						<b>6</b>
Common Yellowthroat	83	72	47	<b>202</b>	56	54	89	<b>199</b>	9	<b>410</b>
Connecticut Warbler	2	7	2	<b>11</b>						<b>11</b>
Copper's Hawk	1		1	<b>2</b>					1	<b>3</b>
Downy Woodpecker	11	3	11	<b>25</b>	5	14	13	<b>32</b>	4	<b>61</b>
Eastern Bluebird						3		<b>3</b>	7	<b>10</b>
Eastern Kingbird	2		1	<b>3</b>	2	4	23	<b>29</b>		<b>32</b>
Eastern Phoebe	10	2	46	<b>58</b>	14	5	14	<b>33</b>	5	<b>96</b>
Eastern Screech-Owl	1			<b>1</b>						<b>1</b>
Eastern Towhee		2	2	<b>4</b>	5	12	21	<b>38</b>		<b>42</b>
Eastern Whip-Poor-Will	1		1	<b>2</b>						<b>2</b>

Species & Forms	Fall				Spring				Other	Grand Total
	Old Cut	Break-water	Tip	Sub Total	Old Cut	Break-water	Tip	Sub Total		
Eastern White-crowned Sparrow			3	<b>3</b>	42	89	174	<b>305</b>		<b>308</b>
Eastern Wood-Pewee	17	13	17	<b>47</b>	5	4	28	<b>37</b>		<b>84</b>
European Starling	1		1	<b>2</b>	4	5	3	<b>12</b>	3	<b>17</b>
Field Sparrow	3	3	18	<b>24</b>	6	27	39	<b>72</b>	1	<b>97</b>
Fox Sparrow	10		2	<b>12</b>	43	3	1	<b>47</b>	7	<b>66</b>
Gambel's White-crowned Sparrow							2	<b>2</b>		<b>2</b>
Golden-crowned Kinglet	161		137	<b>298</b>	76	17	36	<b>129</b>	38	<b>465</b>
Golden-winged Warbler	1		1	<b>2</b>		1	1	<b>2</b>		<b>4</b>
Grasshopper Sparrow						1		<b>1</b>		<b>1</b>
Great Crested Flycatcher	4			<b>4</b>	3	1	4	<b>8</b>	1	<b>13</b>
Gray Catbird	64	9	4	<b>77</b>	212	129	126	<b>467</b>	28	<b>572</b>
Grey-cheeked Thrush	67	31	57	<b>155</b>	7	3	6	<b>16</b>	1	<b>172</b>
Hairy Woodpecker							1	<b>1</b>		<b>1</b>
Hermit Thrush	136		76	<b>212</b>	296	52	34	<b>382</b>		<b>594</b>
Herring Gull			1	<b>1</b>						<b>1</b>
Hooded Warbler			1	<b>1</b>	2		3	<b>5</b>		<b>6</b>
Horned Lark									4	<b>4</b>
House Finch	21		1	<b>22</b>	27		1	<b>28</b>	45	<b>95</b>
House Sparrow	235		19	<b>254</b>	13	1	2	<b>16</b>	107	<b>377</b>
House Wren	43	15	15	<b>73</b>	28	26	26	<b>80</b>	19	<b>172</b>
Indigo Bunting	2		3	<b>5</b>	8	27	27	<b>62</b>		<b>67</b>
Intergrade Flicker							1	<b>1</b>		<b>1</b>
Least Flycatcher	51	24	52	<b>127</b>	30	25	86	<b>141</b>	2	<b>270</b>
Least Sandpiper			1	<b>1</b>			1	<b>1</b>		<b>2</b>
Lincoln's Sparrow	13	1	7	<b>21</b>	65	53	82	<b>200</b>		<b>221</b>

Species & Forms	Fall				Spring				Other	Grand Total
	Old Cut	Break-water	Tip	Sub Total	Old Cut	Break-water	Tip	Sub Total		
Long-eared Owl			4	<b>4</b>						<b>4</b>
Magnolia Warbler	245	201	103	<b>549</b>	196	30	147	<b>373</b>		<b>922</b>
Marsh Wren	1	2		<b>3</b>						<b>3</b>
Merlin			3	<b>3</b>						<b>3</b>
Mourning Dove	5		2	<b>7</b>	19	9	15	<b>43</b>	9	<b>59</b>
Mourning Warbler	7	4	5	<b>16</b>	13	1	13	<b>27</b>	1	<b>44</b>
Myrtle Warbler	204	10	194	<b>408</b>	81	134	165	<b>380</b>		<b>788</b>
Nashville Warbler	71	48	33	<b>152</b>	63	19	23	<b>105</b>		<b>257</b>
Northern Cardinal	66		23	<b>89</b>	15	14	23	<b>52</b>	20	<b>161</b>
Northern Mockingbird							1	<b>1</b>		<b>1</b>
Northern Parula	4	6	3	<b>13</b>	11	4	9	<b>24</b>		<b>37</b>
Northern Rough-winged Swallow					2	1	3	<b>6</b>		<b>6</b>
Northern Saw-whet Owl	308		162	<b>470</b>	1			<b>1</b>		<b>471</b>
Northern Shrike			1	<b>1</b>						<b>1</b>
Northern Waterthrush	34	41	25	<b>100</b>	10	25	36	<b>71</b>	3	<b>174</b>
Olive-sided Flycatcher	1			<b>1</b>						<b>1</b>
Orange-crowned Warbler	6		4	<b>10</b>	3		1	<b>4</b>		<b>14</b>
Orchard Oriole						3	11	<b>14</b>		<b>14</b>
Oregon Junco			2	<b>2</b>					1	<b>3</b>
Ovenbird	38	35	12	<b>85</b>	41	12	12	<b>65</b>		<b>150</b>
Painted Bunting		1		<b>1</b>						<b>1</b>
Philadelphia Vireo	29	13	2	<b>44</b>	24	1	9	<b>34</b>		<b>78</b>
Pine Siskin					4		2	<b>6</b>	24	<b>30</b>
Pine Warbler		1	2	<b>3</b>	1	2	5	<b>8</b>		<b>11</b>
Prairie Warbler							1	<b>1</b>		<b>1</b>

Species & Forms	Fall				Spring				Other	Grand Total
	Old Cut	Break-water	Tip	Sub Total	Old Cut	Break-water	Tip	Sub Total		
Prothonotary Warbler	1			<b>1</b>						<b>1</b>
Purple Finch	46		29	<b>75</b>	13	4	11	<b>28</b>	1	<b>104</b>
Red-bellied Woodpecker			2	<b>2</b>		8	4	<b>12</b>		<b>14</b>
Red-breasted Nuthatch	34	10	165	<b>209</b>	1			<b>1</b>		<b>210</b>
Red-eyed Vireo	141	187	46	<b>374</b>	41	11	70	<b>122</b>		<b>496</b>
Red-headed Woodpecker						1	13	<b>14</b>		<b>14</b>
Red-winged Blackbird	13		10	<b>23</b>	343	118	454	<b>915</b>	105	<b>1,043</b>
Rose-breasted Grosbeak	13	3		<b>16</b>	40	21	98	<b>159</b>		<b>175</b>
Ruby-crowned Kinglet	322		170	<b>492</b>	212	182	116	<b>510</b>		<b>1,002</b>
Rusty Blackbird			2	<b>2</b>			2	<b>2</b>		<b>4</b>
Sanderling			1	<b>1</b>						<b>1</b>
Savannah Sparrow						4	42	<b>46</b>		<b>46</b>
Scarlet Tanager					2	4	23	<b>29</b>		<b>29</b>
Semipalmated Plover			2	<b>2</b>						<b>2</b>
Sharp-shinned Hawk	11		31	<b>42</b>			2	<b>2</b>		<b>44</b>
Slate-colored Junco	84		129	<b>213</b>	274	183	499	<b>956</b>	158	<b>1,327</b>
Snow Bunting									314	<b>314</b>
Solitary Sandpiper							1	<b>1</b>		<b>1</b>
Song Sparrow	34	6	32	<b>72</b>	54	58	105	<b>217</b>	47	<b>336</b>
Spotted Sandpiper			3	<b>3</b>						<b>3</b>
Summer Tanager					2		2	<b>4</b>		<b>4</b>
Swainson's Thrush	227	99	132	<b>458</b>	93	3	33	<b>129</b>	2	<b>589</b>
Swamp Sparrow	34		11	<b>45</b>	49	35	54	<b>138</b>	3	<b>186</b>
Tennessee Warbler	23	28	10	<b>61</b>	8	16	14	<b>38</b>	1	<b>100</b>
Traill's Flycatcher	39	15	30	<b>84</b>	14	9	65	<b>88</b>	14	<b>186</b>

Species & Forms	Fall				Spring				Other	Grand Total
	Old Cut	Break-water	Tip	Sub Total	Old Cut	Break-water	Tip	Sub Total		
Tree Swallow					14	8	2	24	814	838
Tufted Titmouse	5			5						5
Veery	42	10	13	65	28	5	7	40		105
Warbling Vireo	25	17	13	55	8	22	20	50	57	162
Western Palm Warbler	4	8	25	37	18	30	27	75		112
White-breasted Nuthatch	13		48	61		2		2		63
White-crowned Sparrow	5		14	19			1	1		20
White-eyed Vireo					2			2		2
White-throated Sparrow	173		51	224	698	436	449	1,583	6	1,813
Wilson's Warbler	22	19	20	61	26	5	24	55		116
Winter Wren	32		21	53	32	16	11	59	4	116
Wood Thrush	5	1	1	7	25	9	6	40		47
Yellow Palm Warbler					2	3	1	6		6
Yellow Warbler	39	24	27	90	76	145	320	541	24	655
Yellow-bellied Flycatcher	50	16	43	109	16	1	43	60	2	171
Yellow-bellied Sapsucker	1		4	5	2	9	24	35		40
Yellow-billed Cuckoo		1	3	4	1		1	2		6
Yellow-breasted Chat							1	1		1
Yellow-shafted Flicker	2	3	5	10	10	6	20	36		46
Yellow-throated Vireo						2	1	3		3
<b>Totals</b>	<b>4,194</b>	<b>1,388</b>	<b>3,265</b>	<b>8,847</b>	<b>4,483</b>	<b>2,786</b>	<b>6,033</b>	<b>13,302</b>	<b>2,463</b>	<b>24,612</b>